CLAIMS

We claim:

1. A method of measuring the stress migration of vias, comprising the steps of:

forming a metal line having a middle and opposing first and second ends;

forming first and second opposing pads electrically connected to the respective opposing first and second ends of the metal line through respective first and second step-width line structures;

forming a third pad connected to the metal line proximate its first end by a first via through a first metal structure;

forming a fourth pad connected to the metal line proximate its second end by a second via through a second metal structure; the first and second vias being equidistant from the respective first and second ends of the metal line; and

measuring the stress migration of the first via by measuring the sheet resistance between the first pad and the third pad;

and/or

measuring the stress migration of the second via by measuring the sheet resistance between the fourth pad and the second pad.

2. The method of claim 1, wherein the metal line, the first and second step-width line structures and the first and second metal structures being comprised of copper or an aluminum copper alloy.

3. The method of claim 1, wherein the metal line, the first and second step-width line structures and the first and second metal structures being comprised of copper.

4. The method of claim 1, wherein the first, second, third and fourth pads are comprised of copper or an aluminum copper alloy.

5. The method of claim 1, wherein the first, second, third and fourth pads are comprised of copper.

6. The method of claim 1, wherein the metal line 28 has a width w_1 that is one rule wide.

7. The method of claim 1, wherein the first and second pads each have a width and the metal line has a width w_1 with the width of the first and second pads being from about 50 to 75% larger than the width w_1 of the metal line.

8. The method of claim 1, wherein the first and second pads are in a first common plane; and the third and fourth pads are in a second common plane.

9. The method of claim 1, wherein the first, second, third and fourth pads are in a common plane.

10. A method of measuring the stress migration of vias, comprising the steps of:

forming a metal line having a middle and opposing first and second ends;

forming first and second opposing pads electrically connected to the respective opposing first and second ends of the metal line through respective first and second step-width line structures;

forming a third pad connected to the metal line proximate its first end by a first via through a first metal structure;

forming a fourth pad connected to the metal line proximate its second end by a second via through a second metal structure; the first and second vias being equidistant from the respective first and second ends of the metal line; and

measuring the stress migration of the first via by measuring the sheet resistance between the first pad and the third pad; and/or

measuring the stress migration of the second via by measuring the sheet resistance between the fourth pad and the second pad;

wherein the metal line, the first and second step-width line structures and the first and second metal structures being comprised of copper or an aluminum copper alloy.

11. The method of claim 10, wherein the metal line, the first and second step-width line structures and the first and second metal structures being comprised of copper.

12. The method of claim 10, wherein the first, second, third and fourth pads are comprised of copper or an aluminum copper alloy.

13. The method of claim 10, wherein the first, second, third and fourth pads are comprised of copper.

14. The method of claim 10, wherein the metal line 28 has a width w_1 that is one rule wide.

15. The method of claim 10, wherein the first and second pads each have a width and the metal line has a width w_1 with the width of the first and second pads being from about 50 t o75% larger than the width w_1 of the metal line.

16. The method of claim 10, wherein the first and second pads are in a first common plane; and the third and fourth pads are in a second common plane.

17. The method of claim 10, wherein the first, second, third and fourth pads are in a common plane.

18. A test pattern structure, comprising:

a metal line having a middle and opposing first and second ends;

first and second opposing pads electrically connected to the respective opposing first and second ends of the metal line through respective first and second step-width line structures;

a third pad connected to the metal line proximate its first end by a first via through a first metal structure; and

a fourth pad connected to the metal line proximate its second end by a second via through a second metal structure; the first and second vias being equidistant from the respective first and second ends of the metal line.

19. The structure of claim 18, wherein the metal line, the first and second step-width line structures and the first and second metal structures are comprised of copper.

20. The structure of claim 18, wherein the first, second, third and fourth pads are comprised of copper or an aluminum copper alloy.

21. The structure of claim 18, wherein the first, second, third and fourth pads are comprised of copper.

22. The structure of claim 18, wherein the metal line has a width w_1 that is one rule wide.

23. The structure of claim 18, wherein the first and second pads each have a width and the metal line has a width w_1 with the width of the first and second pads being from about 50 to 75% larger than the width w_1 of the metal line.

24. The structure of claim 18, wherein the first and second pads are in a first common plane; and the third and fourth pads are in a second common plane.

25. The structure of claim 18, wherein the first, second, third and fourth pads are in a common plane.

26. A test pattern structure, comprising:

a metal line having a middle and opposing first and second ends;

first and second opposing pads electrically connected to the respective opposing first and second ends of the metal line through respective first and second step-width line structures; the first and second pads being in a first common plane;

a third pad connected to the metal line proximate its first end by a first via through a first metal structure; and

a fourth pad connected to the metal line proximate its second end by a second via through a second metal structure; the first and second vias being equidistant from the respective first and second ends of the metal line; the third and fourth pads being in a second common plane.

27. The structure of claim 26, wherein the metal line, the first and second step-width line structures and the first and second metal structures are comprised of copper.

28. The structure of claim 26, wherein the first, second, third and fourth pads are comprised of copper or an aluminum copper alloy.

29. The structure of claim 26, wherein the first, second, third and fourth pads are comprised of copper.

30. The structure of claim 26, wherein the metal line has a width w_1 that is one rule wide.

31. The structure of claim 26, wherein the first and second pads each have a width and the metal line has a width w_1 with the width of the first and second pads being from about 50 to 75% larger than the width w_1 of the metal line.

32. The structure of claim 26, wherein the first, second, third and fourth pads are in a common plane.